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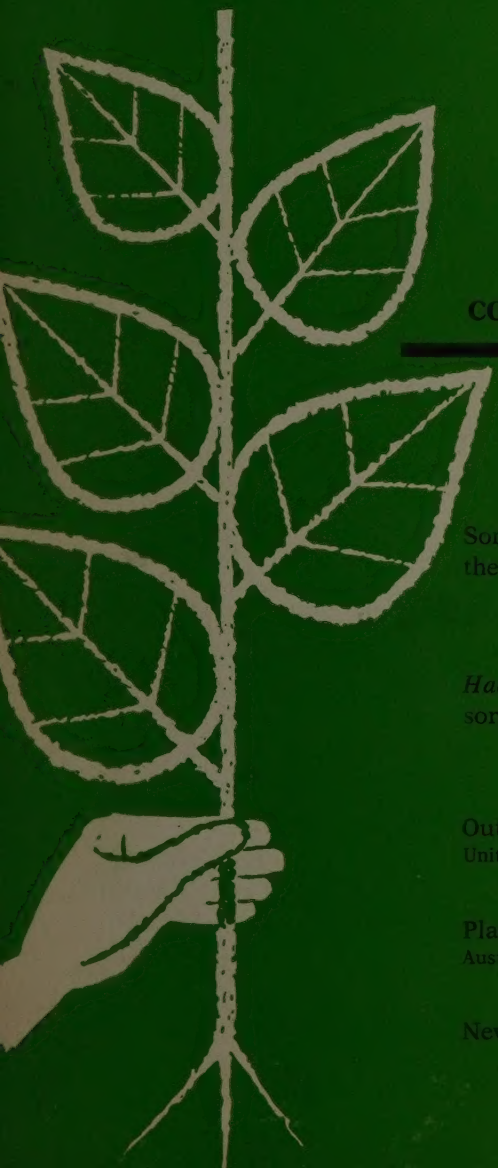
FAO PLANT PROTECTION BULLETIN 9

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS - ROME

A PUBLICATION OF THE WORLD REPORTING SERVICE ON PLANT DISEASES AND PESTS



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FAO PLANT PROTECTION BULLETIN

is issued as a medium for the dissemination of information received by the World Reporting Service on Plant Diseases and Pests, established in accordance with the provisions of the International Plant Protection Convention, 1951. It publishes reports on the occurrence, outbreak and control of pests and diseases of plants and plant products of economic significance and related topics, with special reference to current information. No responsibility is assumed by FAO for opinions and viewpoints expressed in the Bulletin.

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TABULATED INFORMATION ON TROPICAL AND SUBTROPICAL GRAIN LEGUMES

Increasing appreciation of the importance of grain legumes or pulse crops for the improvement of human nutrition – particularly in tropical and subtropical countries, where diets are generally deficient in protein, fats and oils – has resulted in a need to promote and co-ordinate research and exchange of information on the subject.

The above 367-page publication gives a detailed listing of species and varieties of grain legumes grown in tropical and subtropical regions, where most of the underdeveloped areas with major problems of human nutrition occur. If necessary, of course, the project could be extended to cover grain legumes in temperate zones as well.

The information contained in the present volume covers twelve standard headings for each of the countries listed: identification, station submitting the information, source of crop, genetic origin, uses, seed availability, major insect pests, major diseases, morphology and habit, culture, resistances, and yield and quality.

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FAO PLANT PROTECTION BULLETIN

A PUBLICATION OF THE WORLD REPORTING SERVICE ON PLANT DISEASES AND PESTS

all covered elsewhere

Some Important Developments in Plant Diseases in the United States in 1958[1]

Hilde McGrath and *Paul R. Miller*, Crops Research Division, Agricultural Research Service, United States Department of Agriculture

Scab of lima bean

On 7 October 1958 workers at the South Carolina Truck Crop Experiment Station discovered a scab on lima bean plants growing in variety trial plantings at Charleston. The causal fungus was identified as *Elsinoë phaseoli* Jenkins, a pathogen which has caused great destruction on lima beans in Cuba, Puerto Rico and Central America, but which had never before been reported in the United States. Symptoms of the disease included numerous lesions on the pods, stems and leaves (Figure 1). The lower, more mature parts of the plants sustained the greatest attack. Since Concentrated Fordhook was the most severely infected variety, it is possible that the fungus was imported into the United States on its seed. Variety Fordhook 242 was also subject to heavy infection. A few stem or leaf lesions occurred on Clark's Bush, Nemagreen, Baby Green Fordhook, and Thaxton varieties, but the Early Thorogreen variety did not appear to be infected. Sanitation and controlled crop rotation are being used in an attempt to eradicate the fungus. If such measures are not successful, however, this disease could well become a hazard to future lima bean production in the United States.

Figure 1. Scab, caused by *Elsinoë phaseoli* Jenkins, on the pods and stem of Fordhook lima beans (after W. R. Sitterly and W. M. Epps).

A nematode vector of fanleaf virus of grapevines

In 1958 William B. Hewitt, D. J. Raski and A. C. Goheen published results of experiments demonstrating, apparently for the first time, the transmission of a plant virus by a nematode vector.

The soil-borne fanleaf virus of grapevines is widespread and destructive in California, causing mottling and defoliation of leaves, reduction in yield, and vineyard decline. Experiments conducted between 1952 and 1955 confirmed the work of other investigators as to the soil-borne nature

[1] This report has been adapted primarily from recently published material.

of the virus. The next step was to try to establish the vector involved. Phylloxera had frequently been suggested as a possibility, but further experiments in California demonstrated conclusively that this insect does not transmit the virus from diseased to healthy vines, and these results were confirmed by other workers. It was thought possible that the carrier might be one of two species of ectoparasitic nematodes found most consistently in soil in which infected vines are growing; therefore, a series of experiments was undertaken to determine whether one of these nematodes, *Xiphinema index* Thorne and Allen or *Criconemoides xenoplax* Raski, was indeed the vector.

Fanleaf soil (that is, soil in which vines infected with fanleaf were growing) was passed through a 40-mesh screen and then the nematodes plus some organic debris were collected on a 200-mesh screen. The nematodes were separated and hand-picked under a binocular microscope and then washed in distilled water to free them from any organic matter or soil. Small populations of these nematodes were poured over the roots of healthy, one- and two-year-old plants, of *Vitis vinifera* Mission variety and *V. rupestris* St. George variety, growing in clay pots. Within ten months fanleaf virus was transmitted to the healthy plants by *Xiphinema index*, but not by *Criconemoides xenoplax*. In other tests, *X. index* nematodes were collected from soil in which healthy Tokay grapes were growing, as well as from soil in which healthy figs were growing. When the nematodes were placed in a pot containing both a healthy and a diseased plant of St. George grape, the healthy plant developed fanleaf, indicating that the nematodes transmitted the virus from the diseased to the healthy plant. But healthy St. George plants infested with *X. index* did not become diseased when planted alone. In these same tests, a healthy plant growing in the same pot with a diseased plant remained healthy when no nematodes were present in the soil.

Rubbery wood virus of apple

Rubbery wood virus of apple was found for the first time in the United States in an East Malling clonal apple rootstock (EM I) in New York in 1958. Apparently this disease is expressed only on the Lord Lambourne variety of apple. It is relatively common on apples in England and is also prevalent on the Golden Delicious variety in the Netherlands.

Rubbery wood virus causes some stunting in growth and the characteristic "bottleneck" growth habit, that is, a thickening of side branches near the point of origin, which ends in a sudden tapering toward the terminal growth. Infected branches displayed a rubbery texture when touched or bent and two-year-old wood was soft and cheeselike.

In England the incidence of rubbery wood virus is high, whereas the percentage of infection in the New York rootstocks has been low. It is too early to predict how serious this disease will become in the United States.

Hoja blanca of rice

In the 1957 summary of important disease developments in the United States, attention was called to the occurrence of hoja blanca of rice in Florida, at the Belle Glade Experiment Station of the United States Department of Agriculture. At that time it was mentioned that, though rice is not an important crop in Florida, this new destructive disease might have disastrous effects if its range were extended to the commercial rice-growing areas of Arkansas, California, Louisiana, Mississippi, and Texas.

On 1 October 1958 hoja blanca was positively identified on rice at two locations near Bay Saint Louis, Hancock County, Mississippi. *Sogata orizicola* Muir, the only known insect vector for the disease, was also discovered in a rice field in the same county. Results of a survey conducted for the disease in southeastern Georgia and South Carolina were negative, nor was the insect vector found in either of these states. Extensive surveys were also made in Arkansas, Louisiana, Texas, and Mississippi, likewise with negative results.

This second appearance of hoja blanca in the United States, this time in an important rice-growing state, should serve as a warning and indicate emphatically the necessity for constant

vigilance in detecting possible new outbreaks of the disease, and the need for further research on the nature of the disease which may aid in its eradication or control.

Stripe rust of wheat

Although cereal rusts in general were light in 1958, this year marked the second consecutive epidemic of stripe rust of wheat, *Puccinia glumarum* Eriks. and E. Henn. (= *P. striiformis* West.), in the Great Plains wheat belt of the southwestern United States.

In 1957 stripe rust was present in unprecedented proportions in Texas, Oklahoma, Kansas, Nebraska, South Dakota and Wyoming, appearing for the first time in the first four states. In 1958 the disease recurred in these states and was found for the first time in Minnesota and North Dakota. In addition, it occurred in Montana and Washington, where it had been recorded in previous years.

Normally, stripe rust is confined to the mountainous sections of the Pacific Northwest, but cool weather and high rainfall and humidity aided its development in the Great Plains region in 1957. Similar environmental conditions in 1958 explain, in part, the prevalence of the disease in the large wheat-growing regions of the United States. However, other factors contributed to incidence and spread. The source of inoculum for Texas is probably the wheat-growing regions of the Mexican states of Coahuila and Nuevo Leon, where stripe rust occurred in both 1957 and 1958 and where in these years a large part of the wheat acreage was seeded to a highly susceptible variety, Lerma Rojo. A greater number of spores carried by winds blowing northward from Mexico to Texas could explain the build-up of inoculum in Texas in both 1957 and 1958.

In Texas, stripe rust was found in 1958, first in the southern part of the state at the Beeville Station on 3 March. Throughout that month trace amounts appeared at Prairie View, Comfort, and College Station, and by the middle of April susceptible varieties at College Station were heavily infected. By late April and early May the disease had become epidemic in the rolling plains from Ballinger northward to Quanah and Vernon in the panhandle, and infections were established in all parts of central and northeast Texas from Dallas to Texarkana. Infection in the panhandle area was heavy and uniform; some fields showed 100 percent prevalence and severity varied from 10 to 70 percent. Despite the heavy infection, losses in Texas were not very large. Fortunately, the disease was not prevalent on the heads, as is the case in Mexico and South America. Stripe rust remained active in Texas even after the warmer weather arrived in late spring, which normally would have ended the epidemic.

From the Texas panhandle, stripe rust spread to the panhandle of Oklahoma and to Kansas. By early May the disease was well established in fields of the varieties Wichita, Bison, Concho, and Kiowa in southwestern and south-central Kansas. Severity in susceptible varieties ranged from 50 to 80 percent, with an estimated loss of 1 percent for the state.

In Nebraska, stripe rust apparently was not responsible for any loss in yield in 1958. The first observation was reported on 9 May from Wyman in the southeastern section. By mid-May incidence was only a trace in two counties in the South. Later, the rust was observed throughout southern Nebraska, except in the panhandle. Warm weather late in June arrested development of stripe rust and leaf rust became common.

In Colorado, stripe rust was reported on both winter and spring wheat in the Fort Collins area in 1958, although it was not seen or reported from that state in the previous year.

Stripe rust in South Dakota was far more widespread than it had been in 1957. During the spring and summer it occurred over the entire wheat-growing area of the state, starting at the end of May, when it was found first on winter wheat in east-central South Dakota and on spring wheat in the northeastern section. The rust was found throughout the south-central regions of the state on winter wheat during the first part of June and could be seen in almost every field in southern regions in the counties bordering the Missouri River on the west. Generally, only a trace of infection was recorded but

in several cases 5 to 10 percent infection was observed, and in one case as high as 40 percent. It is interesting, and even more significant perhaps, to note that in six fields the disease was found within the heads, rather than being confined to the leaves and sheaths. During the season, stripe rust was also noticed on winter and spring barley and on the wild foxtail barley (*Hordeum jubatum*). Development of the disease in South Dakota probably is attributable to the higher than normal temperatures in May and the lower than normal temperatures in June and July.

The stripe rust situation in Wyoming in 1958 was practically a duplication of 1957, except that in 1958 the disease was more widespread. It occurred abundantly on spring and winter wheat throughout the four southeastern counties, with the most severe infection again being noted at the Agronomy Farm at Laramie, where the elevation is 7,200 feet and where the disease was epidemic. Infection was medium to heavy, with the heavily affected area averaging 70 to 80 percent incidence. The susceptible Onas once more was the variety most severely attacked in experimental plots. Owing to lateness of infection, however, crop loss in Wyoming was only 3 to 5 percent. At Laramie, infection occurred not only on the sheaths and blades of the variety Yogo but the fungus also broke through the inner surface of the lemma and palea.

Stripe rust was reported on winter wheat near Baker, Montana, on 9 July. Only a trace occurred during 1958. This is the first report of this rust in eastern Montana; the disease has been reported previously from the state but was not present in 1957.

Stripe rust was reported for the first time in North Dakota in 1958. It was noticed first on 15 June in experimental nurseries at Fargo. Later trace amounts were found on several durum varieties in nurseries at Edgeley, on durum in experimental plots at Cummings and Hillsboro, and in fields of durum near Edgeley and Valley City in eastern North Dakota. At Hillsboro the disease was also found on Conley bread wheat and on *Hordeum jubatum*. A state survey revealed that incidence was mostly a trace and that severity rarely exceeded 5 percent in commercial fields. Presence of stripe rust in North Dakota was the result of unusually cool, moist weather during June and July, together with an influx of inoculum from states to the south. The central and western parts of North Dakota were not affected, because of the persistence of dry summer weather in those areas.

Minnesota is the second state that reported the occurrence of stripe rust in 1958 for the first time. The disease was found first on 17 June on winter wheat in a field near Stewart, central Minnesota. During the latter part of July the rust occurred in trace amounts on several durum varieties at scattered locations in the southern part of the state. Also during July, it was found commonly on durum varieties in the west-central region. At the end of July stripe rust was prevalent in northwestern Minnesota, and 8 of the 14 varieties grown displayed severe rusting. Langdon, Yuma, and Mindum were the most susceptible varieties.

Stripe rust occurred in Washington in 1958 but in negligible amounts. The disease was reportedly severe early in the season on susceptible varieties at Pullman and in a heavily fertilized field in Walla Walla County but warm weather checked its spread.

Arkansas, Missouri, and Iowa reported that no stripe rust had been observed in 1958.

Hadrotrichum sorghi, the Cause of a New Disease of Sorghum in Italy

Osvaldo Lovisolo, Stazione di Patologia Vegetale, Ministero dell'Agricoltura e delle Foreste, Rome

Hadrotrichum sorghi (Passer.) Ferrar. & Massa has been known for more than 80 years as a parasite of Johnson grass (*Sorghum halepense*), which usually grows as a weed. In 1951 this fungus was found by the writer [1] on cultivated sorghums, causing considerable damage. It appears to be a new case, in which a parasite of wild plants has become established on cultivated plants and therefore acquired economic importance.

The disease was found in almost all sorghum fields inspected but mainly in the many localities of Piedmont, Tuscany and Latium. It has also been reported from Lombardy, Veneto and Emilia in Italy, and from Germany (Botanical Garden, Berlin), Yugoslavia (Carniola and the environs of Belgrade) and the Uzbek S.S.R.

[1] Lovisolo, O., 1951. Osservazioni preliminari sui funghi parassiti *Hadrotrichum phragmitis* e *H. sorghi*. *Nuovo Giorn. Bot. Ital.* n. s. 58: 619-621.

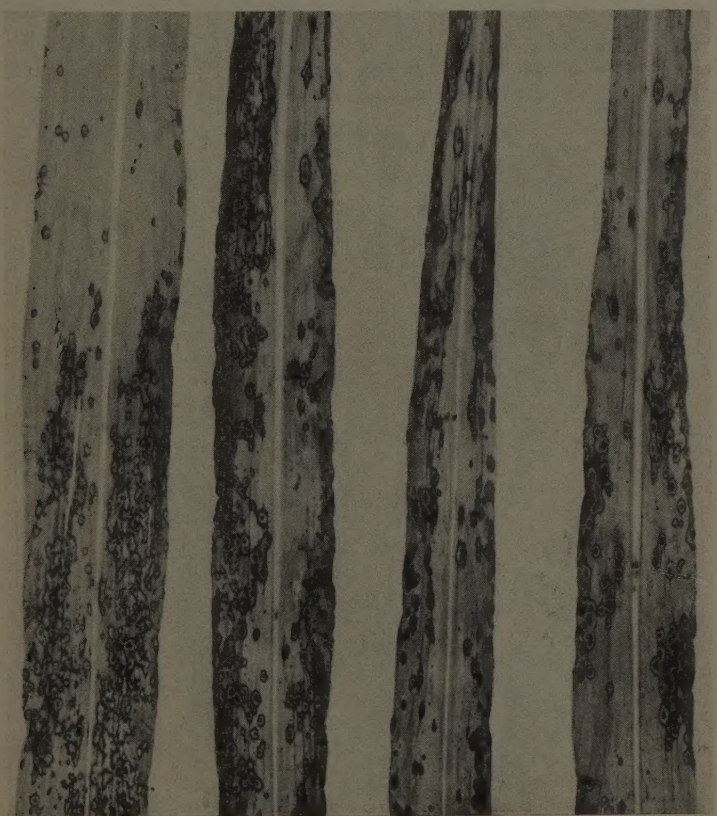

Figure 1. Sorghum leaves infected by *Hadrotrichum sorghi*, showing characteristic spots.

The fungus has been observed on the following host plants, which are listed in order of susceptibility: Sudan grass (*Sorghum sudanense*), sweet sorghum (*S. vulgare* var. *saccharatum*), some cultivated varieties of forage sorghums of *S. vulgare* type, and broomcorn (*S. vulgare* var. *technicum*).

Symptoms of the disease on the various sorghums attacked are similar and characteristic. Spots produced on the leaves are oval and composed of three zones, extending along leaf veins (Figure 1). The center of the spot is blackish and is surrounded by a light brown area and a purple halo. The color of the halo varies with the sorghum variety attacked; on sorghums of *Sorghum vulgare* type it is bright red orange to bright red purple, while on *S. sudanense* and *S. halepense* it appears dark red purple.

On lightly attacked plants the lesions are 3 to 6 millimeters long and mostly isolated, causing practically no damage to the host. On severely attacked plants the necrotic spots coalesce to cover a large part or the whole of the leaf (Figure 2).

Close examination of the lesions shows that the fungus is present only in the black central part of the spot, whereas the surrounding necrotic zone is probably due to action of the

Figure 2. Severe infection of *Hadrotrichum sorghi* on sorghum.

fungus or the toxin produced by it. The mycelium invades the entire thickness of the leaf, producing a stroma, generally on the lower side. The conidiophores that grow densely on the stroma are rather short, thick, brown-olive in color. They are 15-26 μ long and 6-10 μ wide at their median part. At their early stage they are cylindro-conical in shape, each with a large conidium at its apex. Although at later stages a conidiophore produces at its apex two, three or more very short sterigmata, it always carries only a single conidium, indicating that the sterigmata are developed consecutively rather than simultaneously. The conidia are globular to ovoidal and brown-olive in color, measuring 10-18 × 9-15 μ.

Hadrotrichum sorghi appears to be a highly specialized parasite; it has, for example, never been found on maize, even when maize was grown as a fodder crop together with heavily infected sorghum. Although it has been reported on *Panicum miliaceum*, this finding has never been confirmed.

Investigations carried out to date seem to indicate that *Hadrotrichum sorghi* is an obligate parasite. It has never been possible to either isolate or cultivate it on artificial media. Furthermore, the fungus behaves like an obligate parasite, in that it produces a necrotic zone which surrounds the center of infection and checks its spread to healthy tissues. It also prefers young vigorous plants. Severe infection usually occurs during excessively humid summers on densely sown fodder plants and the damage may be sufficiently serious to threaten the crop.

Control of *Hadrotrichum sorghi* is very difficult because of the widespread occurrence of its wild host, Johnson grass, which grows not only on cultivated land but also along ditches and waterways which are inaccessible to normal weed control. Furthermore, as a perennial with rhizomes, Johnson grass is not easy to destroy. However, where the disease causes serious losses, control can be achieved, mainly through the timely elimination of Johnson grass, at least in the vicinity of sorghum fields. In addition, dense sowing should be avoided and early cutting should be practiced in heavily infected fields. The development of varieties resistant or immune to the disease is of basic importance. Observations indicate that the variety Martin's Combine Milo may be immune to *Hadrotrichum sorghi*.

Outbreaks and New Records

UNITED STATES

Plant Pest Control Division, Agricultural Research Service
United States Department of Agriculture

Spread of certain insect pests

New distribution records of economically important insects received during recent weeks include alfalfa weevil (*Hypera postica*) in Alabama and Tennessee, rice water weevil (*Lissorhoptrus oryzophilus*) in California, southwestern corn borer (*Zeadiatraea grandiosella*) in Mississippi and muscid (*Musca autumnalis*) in Ohio and Indiana.

Alfalfa weevil has been spreading westward in Pennsylvania and West Virginia and has been progressing steadily southward during the past three years. The infestation of rice water weevil covers an area of about 500 square miles in Butte, Glenn and Yuba Counties, California. This infestation is the first of this species on the west coast of the United States. The southwestern corn borer infestation at Clarksdale, Mississippi, is the first record of this pest on the eastern side of the Mississippi River. The muscid (*Musca autumnalis*), which was first recorded in the Western Hemisphere in 1952 but not previously regarded as a species of great importance according to the literature, caused considerable annoyance to cattle in Ohio and Indiana during late June and early July 1959.

Plant Quarantine Announcements

AUSTRIA

Plant Import Ordinance of 5 August 1954 (see *FAO Plant Prot. Bull.* 3: 45-46, 1954) provides that the importation of any object which carries and may spread a dangerous plant pest or disease is prohibited. Dr. F. Beran, Director of the Federal Institute for Plant Protection of Austria, has now communicated the following list of plant pests and diseases which are considered dangerous. The list has been drawn up for the purpose of implementing the 1954 Plant Import Ordinance.

Plant pests

Acalla schalleriana
Ceratitis capitata
Eumerus spp.
Grazilaria azaleella
Heterodera rostochiensis
Hyphantria cunea
Lampetia equestris
Laspeyresia molesta
Leptinotarsa decemlineata
Nematodes attacking ornamental plants (especially *Aphelenchoides*, *Ditylenchus* and *Heterodera*)
Phthorimaea operculella
Popillia japonica
Quadraspidiotus perniciosus
Rhagoletis pomonella
Rhizoglyphus spp. on ornamental plants
Tarsonemus pallidus
Taeniothrips simplex
Thysanoptera on ornamental plants
Tortrix pronubana
Viteus vitifolii
Xylosandrus germanus

Plant diseases

Agrobacterium tumefaciens
Botrytis tulipae
Chalara quercina
Corynebacterium sepedonicum
Endothia parasitica
Exobasidium azaleae
Graphium ulmi
Nectria coccinea var. *sanguinella*
Rhizoctonia tuliparum
Sclerotinia bulborum
Septoria azaleae
Septoria gladioli
Synchytrium endobioticum
Xanthomonas hyazinthi

Virus diseases

Virus diseases of strawberry
Virus diseases of potatoes
Virus diseases of legumes
Virus diseases of fruit trees
Virus diseases of grapevine
Virus diseases of beets

DENMARK

Supplementary regulations concerning the importation of plants, parts of plants, etc., of 29 April 1959, which will come into force on 1 September 1959, amends Regulations No. 149 of 27 April 1953 (see *FAO Plant Prot. Bull.* 1 : 158-159, 1953) by adding the following provision with regard to the importation of perennial plants.

Herbaceous perennial ornamental plants (other than bulbs and tubers) and parts there of intended for vegetative propagation may be imported only if they originate from fields which, during the growing season immediately preceding shipment, have been officially inspected and found to conform with the provisions of the Danish regulations governing inspection of

domestic nurseries. The fields of origin must have been free from Colorado beetle (*Leptinotarsa decemlineata*) and Japanese beetle (*Popillia japonica*), and the shipment should consist of only thoroughly washed aerial parts of plants and be free from potato wart (*Synchytrium endobioticum*) and potato root eelworm (*Heterodera rostochiensis*). Freedom of potato root eelworm must be based on an analysis by an approved method of soil samples from the fields where the plants were grown.

The current Danish regulations governing the inspection of domestic nurseries contain the following provisions:

1. The number of plants infected by virus diseases in a plot of a certain variety of perennial plants at the time of inspection must not exceed 2.5 percent and plants visibly affected by virus diseases must be rogued.

2. If the number of plants affected by virus diseases in a plot is from 2.5 to 10 percent, the diseased plants must be rogued and the field is subject to further inspection.

3. In a field with more than 10 percent of plants affected by virus diseases, all plants must be destroyed.

UNITED STATES

Administrative instructions prescribing methods of fumigation of field-grown grapes imported from specific countries, published in the *Federal Register* on 11 December 1958, supplement Quarantine No. 56 concerning fruit and vegetables, for the purpose of preventing the introduction of the vine moth *Lobesia* (*Polychrosis*) *botrana*.

Fumigation in an approved manner is thereby prescribed as a condition of entry under permit for all shipments of field-grown grapes imported from the following countries: Algeria, Austria, Bulgaria, Cyprus, Egypt, France, Germany, Greece, Hungary, Israel, Italy, Libya, Luxembourg, Portugal, Spain, Switzerland, Syria and the U.S.S.R. Grapes must enter the country through New York or such other North Atlantic ports as are named in the permit.

Fumigation is to be carried out with methyl bromide at atmospheric pressure for an exposure time of 2 ½ hours in accordance with the following schedule. Such fumigation may be accomplished in fumigation chambers approved by the Plant Quarantine Division or under tarpaulins in a manner satisfactory to the inspector.

Temperature °F.	Methyl bromide dosage in pounds per 1,000 cubic feet
70–79	2
60–69	2 ½
50–59	3
40–49	3 ½

Grapes from countries where the Mediterranean fr it fly (*Ceratitis capitata*) occurs are subject to cold treatment prescribed in Foreign Plant Quarantine Notice 319.56-206 as amended (see *FAO Plant Prot. Bull.* 2 : 174, 1954).

News and Notes

INTERNATIONAL CONGRESS OF ENTOMOLOGY

The Eleventh International Congress of Entomology will be held in Vienna, Austria, from 17 to 25 August 1960. The sessions will take place at the University of Vienna and the symposia at the Museum of Natural History. The second circular has just been distributed, indicating the Congress arrangements, which will include ten sections to cover the entire range of entomological science.

Symposia will be organized on the following 15 subjects.

1. Insect-acoustics.
2. Long-range displacements and migration of flying insects.
3. Chemistry of the insects.
4. Chemical defensive mechanisms in arthropods.
5. Host-seeking behavior of mosquitos.
6. Transmission of disease by ticks and other acarina.
7. Arthropods in relation to blood protozoa, especially of wild animals.
8. Arthropods as intermediate hosts of helminths.
9. Soil-arthropods.
10. Insect life in large towns (biology in large towns).
11. Tropical forestry entomology.
12. Ephemeroptera.
13. Plecoptera.
14. Odonata.
15. Taxonomy of the entomophagous insects.

Excursions will be arranged during and after the Congress. For further information, inquiries should be addressed to the Secretary's Office, Burgring 7 (Museum of Natural History), Vienna, Austria.

EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION

At its session on 27-28 April 1959, the Council of the European and Mediterranean Plant Protection Organization (EPPO) welcomed the attendance of three new member governments – Bulgaria, Romania and Turkey. Thus in the eight years that have elapsed since EPPO was formally established, its membership has increased from 15 to 27. Only a few countries in Europe and the Mediterranean area still remain outside EPPO, and it is hoped that they, too, will find it possible to become members in the near future.

The report of the second Working Party on Seed-borne Diseases was published in January 1959. The working party, which was composed of specialists on the diseases of tropical or subtropical crops, has listed 12 organisms which give rise to serious diseases in one or other of the following crops: maize, rice, soybean, lucerne, cotton, tobacco. The International Seed Testing Association (ISTA), which works in close co-operation with EPPO in this field, will, with the collaboration of pathologists in countries where the diseases occur, attempt to devise methods for international use by which the organisms can be detected with certainty. The working party strongly endorsed a resolution passed by the British Commonwealth Mycological Conference in 1954, that surveys should be made to discover areas where seed-borne diseases of important economic crops are at a minimum, with the object of encouraging the production of commercial seed

of the highest standard of health, by organizing seed exchange on an international basis. It would be within the competence of ISTA to undertake such surveys, and the working party recommended that FAO, which has embarked on a world campaign for the production of high-quality seed, should explore with ISTA the possibilities of international action in the exchange of seed free from serious seed-borne disease organisms.

One of the more important recommendations of the EPPO Working Party on Stored Products Infestation, whose report was published last November, was that FAO should be invited to explore the possibility of establishing an international agreement, within the framework of the International Plant Protection Convention of 1951, designed to ensure that grain and certain other stored products should as far as possible be shipped free from infestation. This recommendation is under active consideration by FAO.

In February 1959 EPPO published the report of the first international conference it has convened on harmful mammals and their control. Fourteen papers were read at the conference, and they are reproduced in full in the report, together with summaries of the discussions which followed. One of the concrete results of the conference was agreement on a uniform laboratory method of testing the efficiency of the anticoagulant rodenticides which have been developed in recent years and found an effective means of destruction of rats and mice.

The third report of the EPPO Working Party on Phytosanitary Regulations was published in June 1959. It sets out clearly and succinctly the more important considerations which should be borne in mind by those entrusted with the framing of plant protection legislation, and the cardinal principles on which such laws should be based. It recommends that countries should consider the possibility of making bilateral or multilateral agreements with their neighbors, based on such principles, and states that EPPO could usefully take part in the discussions to help in ensuring uniformity of treatment. Many other matters were dealt with by the working party, including:

(*a*) problems relating to the certification of produce in transit;
(*b*) ownership of the phytosanitary certificate;
(*c*) inspection of nurseries;
(*d*) washing and disinfection of seed potatoes to free them from soil and eelworm cysts and safeguard against contamination by surface-borne fungi;
(*e*) the possibility of Japanese beetles being introduced into Europe or the Mediterranean area.

In the last week of May 1959, EPPO held its second Refresher Course for Phytosanitary Inspectors, this time at Lugano, Switzerland. There were approximately 80 participants, sent by 16 member governments.

A small working party of specialists has been appointed by EPPO to meet in Münster, Federal Republic of Germany, in August 1959, to study a problem which is disturbing the plant protection services of many countries, namely, the occurrence in several areas of central Europe of new strains of potato wart disease fungus which may break down the immunity to the disease of potato varieties resistant to the normal strain.

An international conference on citrus virus diseases has been convened in Acireale, Sicily, from 15 to 18 September 1959. The conference will consider the report and recommendations of a mission sent by EPPO to Mediterranean countries in 1957 to study the situation on the spot, with special reference to the serious virus diseases known as tristeza and xyloporosis. The next congress of Mediterranean citriculture, organized by the Permanent Liaison Committee of Mediterranean Agrumiculture (CLAM) is being held in Catania in the period immediately following the EPPO conference, and it is hoped that the principal recommendations of the conference, which may have a direct bearing on the future prosperity of Mediterranean citrus growing, will come under discussion at the congress.

Roma 1959 – Tipografia del Senato del Dott. G. Bardi.

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